

SIEMENS

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PATENT
Attorney Docket No. 2002P84076WOUS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Inventor:	H. Rupp et al.)	
)	Group Art Unit: 3673
Serial No.:	10/538,413)	
)	Examiner: Lee, Gilbert Y.
Filed:	06/10/2005)	
)	
Docket:	2002P84076WOUS)	

Title: BRUSH SEAL FOR SEALING A GAP BETWEEN A ROTOR AND A STATOR

Mail Stop Appeal Brief - Patent
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPELLANT'S BRIEF UNDER 37 CFR 41.37

This brief is in furtherance of the Notice of Appeal filed herewith in this application. A Fee Transmittal form PTO/SB/17 is transmitted concurrently with this paper to authorize the payment of the fee required for submittal of this brief.

1. REAL PARTY IN INTEREST - 37 CFR 41.37(c)(1)(i)

The real party in interest in this Appeal is the assignee Siemens Aktiengesellschaft.

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2. RELATED APPEALS AND INTERFERENCES - 37 CFR 41.37(c)(1)(ii)

There is no other appeal, interference or judicial proceeding that is related to or that will directly affect, or that will be directly affected by, or that will have a bearing on the Board's decision in this Appeal.

3. STATUS OF CLAIMS - 37 CFR 41.37(c)(1)(iii)

Claims pending: 12-21, 23 and 24.

Claims cancelled: 1-11 and 22.

Claims withdrawn but not cancelled: None.

Claims allowed: None.

Claims objected to: None.

Claims rejected: 12-21, 23 and 24.

The claims on appeal are claims 12-21, 23 and 24.

4. STATUS OF AMENDMENTS - 37 CFR 41.37(c)(1)(iv)

Applicants submitted a Reply After Final Rejection under 35 USC 1.116 on 08/10/2007. That paper contained amendments to claim 15 to overcome an objection and a rejection under 35 USC 112, second paragraph, contained in the 05/22/2007 Final Office action. At the time of submission of this Appeal Brief, an Advisory Action was not received from the Examiner. However, for purposes of this Appeal Brief, Applicants are assuming that the requested amendments to claim 15 will have been entered under 37 CFR 1.116 by the time this appeal is considered. Thus, the claims discussed herein reflect the amendments to claim 15 that were presented in the Applicants' amendment under 37 CFR 1.116.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER- 37 CFR 41.37(c)(1)(v)

This invention relates generally to a brush seal for sealing a gap between a rotor and a stator where brush ring carrier components of the brush seal matingly fit together via a snap connection that directly fixes these components both axially and radially as shown in Fig. 1. It is

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noted that the following citations to paragraph and line numbers within the paragraphs refer to the substitute specification filed June 10, 2005.

More particularly, the sole independent claim, claim 12, is directed to a brush seal 5 (paragraph 0027, lines 2-6) for sealing a gap between a rotor 3 (paragraph 0027, lines 1-2) and a stator 1 (paragraph 0027, lines 1-2) which includes a brush ring 7 (paragraph 0027, lines 4-5) having a multiplicity of sealing bristles, and with at least two annular brush ring carriers 9, 11, 13 (paragraph 0027, lines 4-6) extending in the circumferential direction of the rotor, each brush ring 7 (paragraph 0027, lines 4-5) being fixed between a first end face 15 (paragraph 0030, lines 1-2) of a first brush ring carrier 9 (paragraph 0030, lines 1-2) and a second end face 23 (paragraph 0031, lines 1-4, and paragraph 32 lines 6-9) of a second brush ring carrier 9 (paragraph 0032, lines 6-9), and the second brush ring carrier 9 being directly fixed axially and radially to the first brush ring carrier 9 (paragraph 0031, lines 3-4 and paragraph 0032, lines 6-9), wherein the second brush ring carrier 9, 13 (paragraphs 0031-0033 and Fig. 1) is fixed to the first brush ring carrier 11, 9 (paragraphs 0031-0033 and Fig. 1) by an unreleasable snap connection (paragraph 0034, lines 1-4).

6. GROUNDS OF REJECTION TO BE REVIEWED UPON APPEAL - 37 CFR 41.37(c)(1)(vi)

The sole grounds of rejection presented for review on appeal is that claims 12-21, 23 and 24 are rejected under 35 USC 103(a) as being unpatentable over Walter et al., U.S. Patent No. 3,773,336 (hereinafter "Walter et al.") in view of Langston et al., U.S. Patent No. 6,623,238 (hereinafter, "Langston et al.").

7. ARGUMENT 37 CFR 41.37(c)(1)(vii)

A. Arguments applicable to all claims

Applicant respectfully asserts that the Examiner has clearly erred in his interpretation of Walter et al. where he interprets Walter et al. to teach the claimed unreleasable snap connection.

The Appellants argue that there has never been an adequate demonstration by the Patent Office that the cited primary reference, Walter et al., teaches an unreleasable snap connection that is responsible for the axial and radial fixing between a first end face of a first brush ring carrier and a second end face of a second brush ring carrier of the brush seal claimed in the independent claim 12. It is Appellants' position that Walter et al. does not teach this, nor

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anything close to it, and that the rejections to claim 12 and its dependent claims based on Walter et al. should be withdrawn and the claims allowed.

Walter et al. teaches apparatuses that have a feature of being able to axially displace existing sealing rings, operating on a bushing of a ship's drive shaft, so that replacement sealing rings may take their place in operation (see, inter alia, Col. 1, lines 41-47). As described for FIG. 1 of Walter et al., "a sealing ring holder 8 is provided with annular flange parts 9, 10 and 11, between which there are disposed a first sealing ring 12, which initially acts on the rotatable part, and a spare sealing ring 13." (Col. 2, lines 55-59). Reading further in this paragraph Walter et al. refer to the annular flange parts 9, 10 and 11 as "holder parts" (there is no other component that would meet this term in view of the description and relationship to the sealing rings 12 and 13). How are these holder parts/annular flange parts 9, 10 and 11 held together? The answer is clear:

"In the working position the holder parts surrounding the thickened ring abut directly against one another and are detachably made fast to one another, for example by threaded bolts." (Col. 3, lines 4-7, underline emphasis added)

So in this embodiment the annular flange parts 9, 10 and 11 are detachably made fast to one another by a means such as bolting these parts together. The remainder of the Walter et al. specification fails to disclose any other method of attachment of these components, so this is the only such teaching in Walter et al. and must be presumed to apply to all figures and examples.

From the above quotation it must be concluded that the Figure 1 embodiment of Walter et al. provides annular flange parts 9, 10 and 11 that are detachable, such as by being made fast to one another by threaded bolts. There is nothing thus far in Walter et al. that can be reasonably stated to teach an unreleasable snap connection between these components.

Further, it is noted that the mating surfaces of annular flange parts 9, 10, and 11 are essentially the same as the mating surfaces of the analogous components of FIGs. 6 and 8 of Walter et al., variously used by the Patent Office in the rejection. The only obvious difference is that there are reversed in orientation left to right. That is, in FIG. 1 a more outwardly disposed protrusion extends to the right, whereas in FIGs. 6 and 8 such protrusion extends to the left; otherwise the mating surfaces are analogous. Thus, failing any other teaching, which applicants have not found in Walter et al., one must conclude that in the examples of FIGs. 6 and 8 the annular flange parts, identified as A through E in Examiner's Attachment C, "abut directly against one another and are detachably made fast to one another, for example by threaded bolts."

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This is an alternative to, and not the same as, any type of a snap connection, as that term is used in the art and in the present application, and this clearly does this teach the unreleasable snap connection as claimed in claim 12.

Notwithstanding the above, the Examiner has made the statement in the Final Office action, page 3:

"Regarding claim 12, the Walter et al. reference discloses a seal (Fig. 6) sealing a gap between a rotor (e.g. 17) and a stator (e.g. 15) comprising: . . . wherein the second ring carrier is fixed to the first ring carrier by an unreleasable snap connection (Fig. 6), including the ring being a lip ring (Fig. 6)." Applicants respectfully assert that this is error and the rejection based on this erroneous conclusion must be reversed.

First as to this quotation, it is noted that reference is made to Fig. 6 but Examiner's Attachment C, sent with the Final Office action, provides Fig. 8, which is sheet 6 of 6. (It is noted that Fig. 6 was previously provided as Examiner's Attachment A in an earlier Office action.) The relevant features of Fig. 6 and Fig. 8 as to these arguments are identical, so reference above was made to both Fig. 6 and Fig. 8.

Second, and substantively, these Walter et al. figures, based on the above argument and evidence, do not teach an unreleasable snap connection as claimed in claim 12. The features of a particular snap connection used in the present invention are clearly provided in the applicant's specification, Figure 1 including the enlargement of brush ring carrier 9, and described in paragraph numbers 31 to 33.

Third, and further to the above-quoted phrase from Walter et al., to state the obvious, a mechanism to detachably make fast one component to another does not comport with a snap connection approach that is stated to be unreleasable. On this point alone the rejection based on Walter et al. is improper.

Related to the above, Walter et al. does not, as required by claim 12, directly fix the components (which are allegedly analogous to claim 12's first and second brush ring carriers) both axially and radially by an unreleasable snap connection. That the only disclosed method of fixing is by a threaded bolt means that to operate the components using a bolt there must be a slidable engagement of one component over the other, so there is axial movement until the bolt is attached. Thus, it is error to conclude that Walter et al. teaches directly fixing axially and radially by an unreleasable snap connection.

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In the alternative, as stated previously in the 02/26/2007 Reply, the Walter et al. embodiment does not meet claim 12 as alleged because a lip ring as shown in Fig. 6 is not synonymous with an unreleasable snap connection. There is no snap connection in the common understanding of the term. Therefore construing of Walter et al. to provide a lip ring type of seal does not teach all limitations of claim 12. Further, as noted above, there is no teaching in Walter et al. that the structures comprise any kind of a snap connection.

As to the latter point, it is noted that there is no specific matching of components in the above quotation from the Final Office action that directs the applicant to what is considered an "unreleasable snap connection" in Walter et al. This is error, albeit understandable because there is no basis for demonstrating that any embodiment of Walter et al. teaches an unreleasable snap connection. These latter two points are further examined in the supplemental section on claim 14, which includes greater analysis of terms used in that claim and over broadly defined by the Examiner in applicant's opinion. The analysis in the section regarding claim 14 may be incorporated into this section as needed to support the argument of a lack of a snap connection in Walter et al. as that term is generally understood.

Further, and in the alternative, there is error based on use of unreasonable and overbroad definitions in the Examiner's effort to demonstrate that Walter et al. allegedly teaches the invention of claim 12. In the Final Office action, page 6, the Examiner noted a definition of "snap-on" as "attached or fitting into place by means of a snap or with a pressing motion: snap-on bottle tops." To make this definition "work" for Walter et al. appears to require using "fitting into place . . . with a pressing motion" from this selective definition of "snap-on." This so broadens the common understanding of a snap connection as to unacceptably include a wide range of sliding fittings. Under this strained definition, a foot fitting into a sock under a pressing motion is a "snap-on connection", a PVC pipe pressed into a PVC slip fitting is a "snap-on connection," and a stapler driving a staple to attach papers provides a "snap-on connection." The Examiner's approach to defining terms in order to assert that Walter et al. reads on the elements of the present claims unacceptably strains logic and normal understanding of these terms to the point of error.

Also, this term "snap-on" is not used in claim 12. Rather, "unreleasable snap connection" is used. The Examiner never demonstrated how Walter et al. provides an unreleasable connection, snap or otherwise, and this is error. That is, even setting aside this

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strained definition there is no logic, reasoning, or argument as to how there is an unreleasable snap connection in Walter et al. In view of the quotation above from Walter et al. as to bolting together the members, applicants respectfully assert that the Examiner has postulated a snap connection where there is no basis for one. Logic dictates that if the only method advanced for attachment of annular flange/holder parts 9, 10 and 11 in Walter et al. is a bolt through these, it makes no sense, and there is no explicit basis, to assert that these also are attached together by a snap connection. It makes even less sense to assert, in view of the stated use of a bolt for connection of these components, where such connection explicitly provides detachability, that there is a teaching of an unreleasable snap connection. Why would one need a bolt if there were a means of connection that provided an unreleasable snap connection? And vice-versa, why provide a bolt for detachable making fast of the components when they are allegedly held together by an unreleasable snap connection?

Thus, there is a logical disconnect between the assertions of the Examiner and the only teaching for connection of these elements in Walter et al. (noting that the explanation was provided for an earlier figure, and no other teaching or connection-related configurational change in FIGs. 6 or 8 would lead one to conclude that a bolt now would not be used, and to further conclude that there was instead an unreleasable snap connection). Further, given that the bolt is the only indicated specific method, it is reasonable to assume that the tolerances of the mating surfaces of the annular flange/holder parts 9, 10 and 11 in Walter et al. were such that a protruding portion of one part could be slid over a lip of a second part to allow easy assembly prior to bolting. Again, it is not logical to conclude that there would be both an unreleasable snap connection (the structure of which is not disclosed in the figures of Walter et al.) and a bolting-through connection when the only indicated method of connection is by a bolt there through the annular flange/holder parts 9, 10 and 11 in FIG. 1 of Walter et al.

Also, the Examiner has combined Walter et al. with Langston et al., stating that the latter "discloses that a brush seal can replace a lip seal (Col. 5, Lines 10-15). Even setting aside for this paragraph the failure of Walter et al. to teach all elements of claim 12, applicants respectfully assert that it requires impermissible hindsight to combine Walter et al., with Langston et al. Langston et al. relates to a seal assembly about a rotating shaft in a turbine, which may have a fluid flow to an intermediate space of the assembly. As stated in the 02/26/2007 Reply, Walter et al. is directed to shaft seals with the examples being the propeller

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shafts of ships. These are taught to use spring-loaded sealing rings (col. 2, line 59 to col. 3, line 10), and it is appreciated that such rings are needed to restrict the passage of water that may travel along the shaft being contained within the stern tube seal apparatus (i.e., within the bush 17). Clearly, to combine these references in an attempt to reach the limitations of claim 12 teaches against the intended purpose of Walter et al. to restrict water passage, that is, the proposed modification renders the prior art unsatisfactory for its intended purpose (see MPEP 2145 X.D.). This is because if one were to substitute brush seals of Langston et al. for the sealing rings of Walter et al., the brush seals, having spaces between components of the brush itself, would readily allow passage of water, whereas as noted the spring-tensioned sealing rings are designed to restrict water passage. Further, the reasoning for combining does not rise to the level of providing an adequate rationale for combining these references: there is no underlying rationale to justify the statement at the top of page 4 of the Final Office action, "... in order to cause the exit fluid flow to be less modulated than the entering fluid flow." Thus, combining these references is error.

Therefore, for one or more of the reasons above, the Examiner has erred in making the above quoted statement and this statement is not a proper foundation for the rejection. For this reason, and/or for any of the above reasons in any combination, withdrawal of the rejection of claim 12 and all claims depending from it is respectfully requested.

B. Supplemental arguments applicable only to claim 13

Applicant notes an apparent error in the Final Office action paragraph on page 4 regarding claim 13. At the end of this paragraph there is a "wherein" phrase that pertains to claim 14. For the record, claim 13 does not recite a circumferential slot nor a latching nose. It is Appellant's position that claim 13 is allowable in view of the arguments made above as to claim 12, from which claim 13 depends.

C. Supplemental arguments applicable only to claim 14

The above arguments provided against the use of Walter et al. as a 35 USC 103(a) reference for claim 12's rejection apply to this rejection, and are incorporated into this section. In addition, as discussed below elements of Claim 14 clearly are not taught by the text or figures

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of Walter et al. when considering meanings of common terms as known to those skilled in the art and particularly as these terms are specifically used in the specification including the figures.

First, the applicant asserts that a common understanding of the term "snap connection" requires that a latching nose used in such snap connection actually latch over a member to form an engaging type of a joining. The last phrase of claim 14 states, "... wherein the snap connection is formed between the circumferential slot and the latching nose." On page 4 of the Final Office action the Examiner has stated that in Walter et al., as modified in claim 12, "... the projection and the latching nose of the second brush ring carrier [cooperate] with the shoulder and the circumferential slot of an adjacently arranged first brush ring carrier (Fig. 6)." The Examiner also equates the latching nose to the "portion of element C latched to element J," yet there appears in the figure no deviation from the linear in the figure that would indicate or even suggest a latch as that term is known to those skilled in the art, and as a latch or latching nose would commonly be used in a snap connection. On this basis alone, it must be concluded that the Examiner erred when making the rejection of claim 14 based on Walter et al.

Second, as stated in the 02/26/2007 Reply, applicants respectfully dispute the assertion that Walter et al. provides a "shoulder with a circumferential slot (K)." A slot may be defined as a "narrow notch, groove or opening" (Webster's New World Dictionary, 2nd Ed.) The flat expanse identified as I in Fig. 6 has only one raised boundary, the upper surface of J, and lacks a second opposing boundary that would define a slot, such slot being a narrow notch or groove. The Examiner states that "a slot does not need three boundaries as the applicant is alleging" (page 6 of Final Office action), yet to achieve the claim 14 requirement of "wherein the snap connection is formed between the circumferential slot and the latching nose" 14, there must be something for the latching nose to catch on. In Fig. 6 of Walter et al., there is nothing to catch on so the alleged "slot" does not meet this aspect of the claim. This is clear error based on overbroad definition of "slot" by the Examiner.

Also, in addition to the above paragraph Applicants respectfully dispute the assertion that Walter et al. provides a "latching nose" since a latching nose cannot reasonably be stated to be that "portion of element C attached to element J." As stated by Applicants on page 7, last paragraph of the February 26, 2006 Response, a latch, when referring to a fastening for a door or a gate, in part is stated to consist of "a bar that falls into a notch in a piece attached to a doorjamb or gatepost". (Webster's New World Dictionary, 2nd Ed.). Again, the concept of a notch, being

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a "narrow pass with steep sides" or a "gap" does not comport with the stated features of Fig. 6 since there is no slot or notch into which may fit the noted portion of element C. (As further evidence of the lack of this feature, note that two opposing extensions are provided in Fig. 8 of Walter et al. to retain each sealing ring (29, 30) top portion in the sealing ring holders. If Walter et al. meant to show a latching nose where the Examiner alleges there is one, it would have an inflection from the linear somewhat like that shown to retain sealing rings 29 and 30 in the same figure (even if functions were different).) Therefore, based on one or more of these issues, in part based on common understanding of the meaning of relevant terms, there is clear error by the Examiner and these bases for the rejection of claim 14 should be withdrawn.

In the Final Office action, pages 6-7, the Examiner essentially selects unsuited definitions to support the alleged existence of elements from claim 14 in Examiner's Attachment C/FIG. 8 of Walter et al. As discussed above, the exercise results in an extreme broadening of the terms' definitions to the point of an illogic consequence: if one accepts all of the meanings offered by the Examiner, where is the unreleasable snap connection? First (skipping the definition offered for "snap-on" which is discussed for claim 12 above and is incorporated here), the Examiner states that a slot need not have three boundaries. No support is provided, nor is there an explanation as to how the slot alleged to exist in FIG. 8, stated to be "the upper surface of J and the surface I," combine to provide the unreleasable snap connection with the latching nose. As to the latter, the Examiner states that "the latching nose would only have to be considered as a bar, which element L is clearly shown as in Figure 6 [sic] of the Walter et al. reference." Such selective defining of the terms may be tempting but in this case inexorably leads to the point of illogic: again, how do these elements combine to form an unreleasable snap connection? They do not, and it is clear error to make this rejection based on these overbroad definitions that are unsuited to the invention at issue.

D. Supplemental arguments applicable only to claim 15

As noted above, the objection and the 35 USC 112, second paragraph rejection of claim 15 have been addressed in an amendment submitted under 37 CFR 1.116, the entry of which is assumed for purposes of this Appeal Brief.

The arguments above are incorporated, specifically as Walter et al.'s lack of an unreleasable snap connection and lack of a functional latching nose.

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As to the rejection under 35 USC 103(a), there is clear error because the explanations of components on pages 4 and 6 of the Final Office action, taken together, are not consistent. On page 4, pertaining to claim 15, it is stated that on a first face (S) of the second brush ring carrier (C) is a shoulder (not specifically identified but presumably the surface S or the outer surface of the protrusion from it, R) with a circumferential slot (R). Yet on page 6, responding to applicants' arguments, the Examiner states that "the boundaries of the slot is [sic] the upper surface J and the surface I, which ultimately make a groove that opens upward and as well to the right." Analysis of Examiner's Attachment C/Figure 8 reveals that the upper surface of J is structurally identical with R of the adjacent brush ring carrier, and S is structurally identical with I. Thus, on one hand the surfaces S and R together and J and I together are slots, and in another place they are the shoulder and the circumferential slot. This means the Examiner is attempting to craft both a shoulder and a circumferential slot from a structural feature that elsewhere is stated to be the slot alone. This means that there are not enough features in this figure to correlate with the features of the invention as claimed in claim 15. Adding to this conclusion is the fact that, contrary to the example on page 4 suggesting that the latching nose is the portion of element C "latched" to element J, the latching nose does not in fact latch to anything as that term is normally used in the art. There is only a planar arrangement of elements which, per the above, are expected to slide over one another prior to being bolted together.

For these supplemental reasons, in combination with the arguments and evidence of the above sections, there was clear error in rejecting claim 15.

E. Supplemental arguments applicable only to claim 17

The arguments in the claim 12 and claim 14 sections related to latching nose are incorporated into this section. It is reasserted here that the normal understanding of a latching nose are not met by Walter et al., where there is no inflection along the structures to provide a "nose-like" protrusion capable of catching onto another structure for attachment. Also, the alleged circumferential slot of Walter et al., comprising by one explanation surfaces S and R, is not disposed to receive the latching nose in the normal sense of the terms in that there is no deviation from a planar surface to receive the latching nose.

For these reasons, in any combination with the above for claims 12 and 14, there is error in the rejection of claim 17.

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F. Supplemental arguments applicable only to claim 23 and 24

Claims 23 and 24 respectively depend from claims 14 and 17 and each have the limitation, "wherein the circumferential slot is formed disposed toward an outside diameter of the at least one first brush ring carrier." Viewing the enlarged brush ring carrier 9 in FIG. 1, the circumferential slot 21 may be seen to be disposed toward an outside diameter across which the lead line from 9 crosses.

In the Final Office action, bottom of page 5, the Examiner merely states that Walter et al, "... as modified in claims 14 and 17 as best understood, discloses the circumferential slot being formed disposed toward an outside diameter of the at least one first brush ring carrier." On page 6 of the Final Office action, the Examiner states that the boundaries of the circumferential slot are "the upper surface of J and the surface I, which ultimately makes a groove that opens upward and as well to the right." Applicants respectfully assert that 1) such alleged circumferential slot cannot properly be stated to be a slot (see above arguments) as that term is commonly understood and used in the present application, 2) such alleged circumferential slot, stated to be the noted groove, is disposed diagonally outward, to the right rather than toward an outside diameter. Functionally this is significant, as it does not allow for operation of a latching nose with the slot as required in claim 14.

Also, as noted above, the Walter et al. embodiments do not provide for a snap connection to be formed between the circumferential slot and the latching nose, as required in claim 14, and now modified so that the circumferential slot is disposed toward the outside diameter.

8. CLAIMS APPENDIX - 37 CFR 41.37(c) (1) (viii).

A copy of the claims involved in this appeal is attached as a claims appendix under 37 CFR 41.37(c) (1) (viii), started on a separate page after the signature page.

9. EVIDENCE APPENDIX - 37 CFR 41.37(c) (1) (ix)

Evidence as entered by the Examiner in two Office communications (11/30/2006 and 05/22/2007) is supplied in the Evidence Appendix following the Claims Appendix, and started on a separate page. This evidence is marked-up figures of the Walter et al. U.S. Patent No. 3,773,336.

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10. RELATED PROCEEDINGS APPENDIX - 37 CFR 41.37(c) (1) (x)

None is required under 37 CFR 41.37(c) (1) (x).

Conclusion

The Appellant submits that the Patent Office has made a number of errors in its Office actions by rejection of the indicated claims under 35 USC 103. Withdrawal of the rejections is requested of the Board in this appeal.

The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

Dated: 8/22/07

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CLAIMS APPENDIX

12. A brush seal for sealing a gap between a rotor and a stator, comprising:
a brush ring having a multiplicity of sealing bristles, and with at least two annular brush ring carriers extending in the circumferential direction of the rotor, each brush ring being fixed between a first end face of a first brush ring carrier and a second end face of a second brush ring carrier, and the second brush ring carrier being directly fixed axially and radially to the first brush ring carrier,
wherein the second brush ring carrier is fixed to the first brush ring carrier by an unreleasable snap connection.
13. The brush seal as claimed in claim 12, wherein a slot is formed between the first brush ring carrier and the second brush ring carrier and the slot receives the brush ring.
14. The brush seal as claimed in claim 12, wherein at least one first brush ring carrier has on its first end face a shoulder with a circumferential slot and at least one second brush ring carrier has on its second end face a continuous projection, with a latching nose, and the projection and the latching nose of the second brush ring carrier cooperates with the shoulder and with the circumferential slot of an adjacently arranged first brush ring carrier, wherein the snap connection is formed between the circumferential slot and the latching nose.
15. The brush seal as claimed in claim 12, wherein the second brush ring carrier has on its first end face a shoulder with a circumferential slot on its second end face a continuous projection, with a latching nose, and the projection and the latching nose of the second end face of the second brush ring carrier cooperates with a shoulder and with a circumferential slot of the first brush ring carrier.
16. The brush seal as claimed in claim 12, wherein one brush ring carrier is held at least indirectly on the stator.

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17. The brush seal as claimed in claim 14, comprising a plurality of the brush ring carriers of claim 14 adapted for sequential installation onto a stator, wherein the circumferential slot of one of the plurality of the brush ring carriers is disposed to receive the latching nose of an adjacently arranged brush ring carrier.

18. The brush seal as claimed in claim 12, wherein the brush ring carrier or brush ring carriers have a support plate that extends in the direction of the rotor and the brush rings bear axially against the support plate.

19. The brush seal as claimed in claim 12, wherein the brush ring carrier or brush ring carriers have a protective ring.

20. The brush seal as claimed in claim 19, additionally comprising a support plate, wherein at least one of the support plate and the protective ring is or are designed to be radially elastic.

21. The brush seal as claimed in claim 12, wherein the brush seal is designed as a radial seal or axial seal.

23. The brush seal as claimed in claim 14, wherein the circumferential slot is formed disposed toward an outside diameter of the at least one first brush ring carrier.

24. The brush seal as claimed in claim 17, wherein the circumferential slot is formed disposed toward an outside diameter of the at least one first brush ring carrier.

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EVIDENCE APPENDIX

On the following pages are provided:

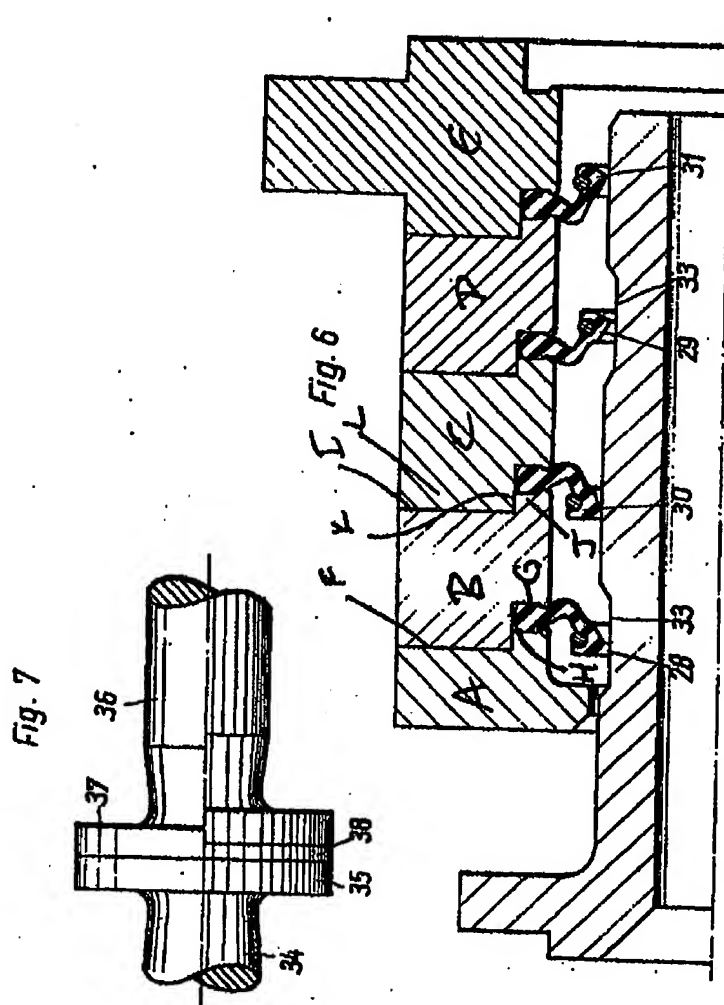
1. A copy of Examiner's Attachment A and Examiner's Attachment B, presented with the Office communication mailed 11/30/2006. (two pages); and
2. A copy of Examiner's Attachment C, presented with the Final Office communication mailed 05/22/2007. (one page)

EXAMINER'S ATTACHMENT A

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EXAMINER'S ATTACHMENT B

U.S. Patent

Sep. 23, 2003

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US 6,623,238 B2

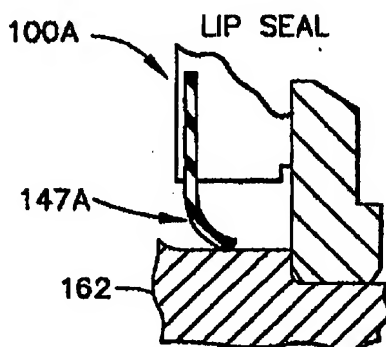


FIG. 7A

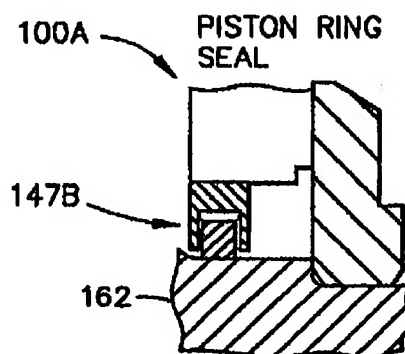


FIG. 7B

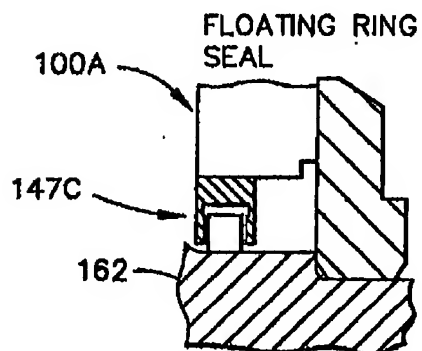


FIG. 7C

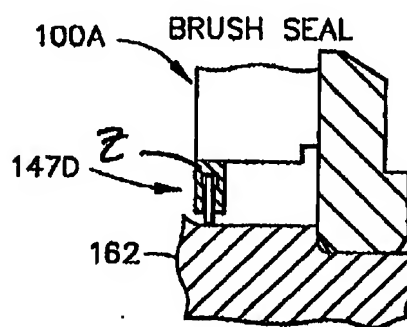


FIG. 7D

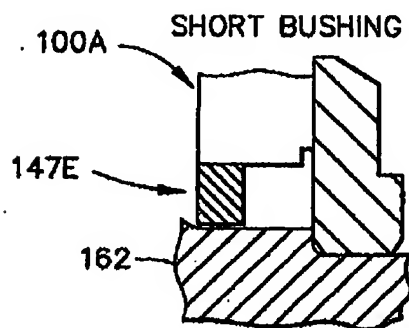


FIG. 7E

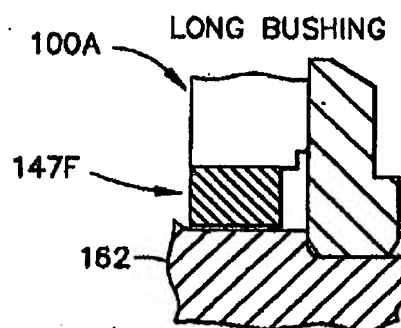


FIG. 7F

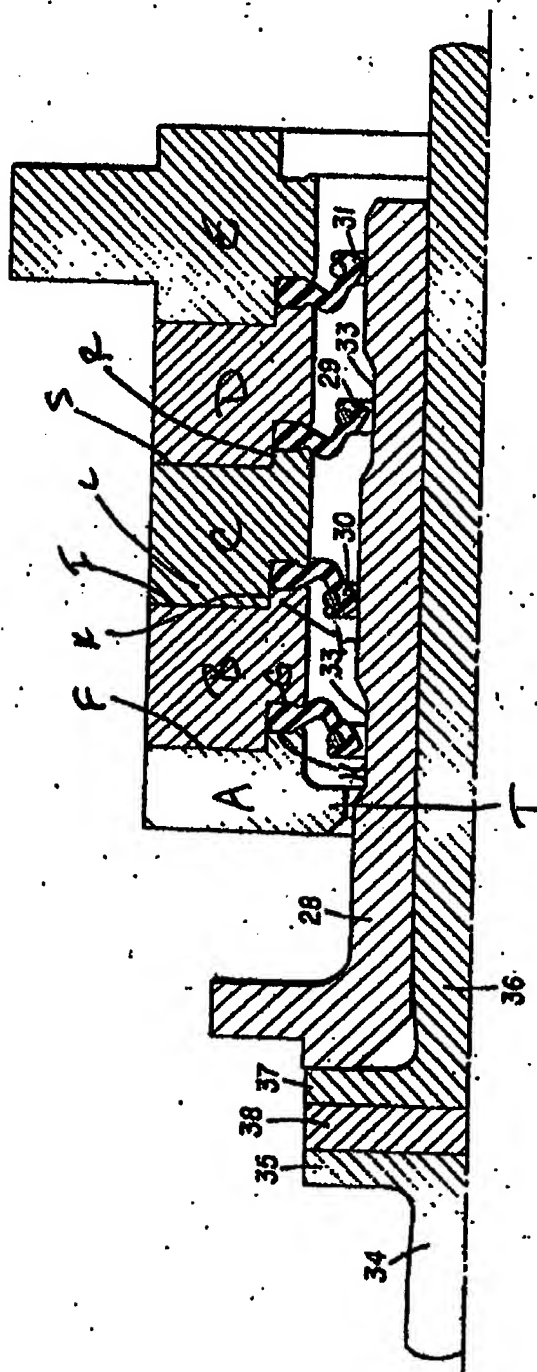
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EXAMINER'S ATTACHMENT C

PATENTED NOV 20 1973

3,773,336

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5/13/2007, EAST Version: 2.1.0.14

Serial No. 10/538,413
Atty. Doc. No. 2002P84076WOUS

RELATED PROCEEDINGS APPENDIX

None.